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# Telecommunications Infrastructure Development in Pennsylvania: A Prescription for Effective Regulatory Reform

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# Telecommunications Infrastructure Development in Pennsylvania: A Prescription for Effective Regulatory Reform

## I. Introduction

The widespread economic, social and cultural benefits of an advanced telecommunications infrastructure are largely undisputed.[1] The transmission of voice, data and video images in seemingly endless quantities through a single telecommunications network would potentially benefit all sectors of American society.[2] The advantages of a highly developed telecommunications infrastructure are especially promising for largely rural states such as Pennsylvania, where an advanced network would offer equal access to an increasingly global economy, provide increased employment opportunities, and improve standards of living.[3]

Substantial controversy exists, however, over the proper balance between the diverse and competing interests involved in the development of an advanced telecommunications network.[4] Pennsylvania's present

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1. Christine Rathbun, Telecommunications Policy 1-2 (April 23, 1992) (unpublished policy memorandum on file with the Senate of Pennsylvania Majority Caucus Policy Development and Research Office). *See also* NATIONAL TELECOMMUNICATIONS INFRASTRUCTURE ASS'N, THE NTIA INFRASTRUCTURE REPORT: TELECOMMUNICATIONS IN THE AGE OF INFORMATION 21 (1991) [hereinafter NTIA REPORT]. Most regulators, legislators and policy experts involved in the infrastructure debate agree that an advanced telecommunications infrastructure, on both the federal and state levels, is a laudable policy goal. *See id.* Moreover, the evolution of the global economy and the growth of information-intensive industries has moved the infrastructure issue to the forefront of federal and state economic development efforts. *See id.* at 23-24.

2. NTIA REPORT, *supra* note 1, at 25-27, 35-41, 46-86. An advanced telecommunications infrastructure would benefit the education and health care sectors of the economy through distance learning programs, interactive video services and the "sharing" of advanced technologies. *Id.* at 46-86. In the home, an advanced telecommunications network utilizing fiber optic cable could offer high definition television, home banking services, movies-on-demand, work-at-home services and home shopping. *See* Rathbun, *supra* note 1, at 6.

3. *See* CONGRESS OF THE UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT, RURAL AMERICA AT THE CROSSROADS: NETWORKING FOR THE FUTURE 5-15 (1991).

4. The present controversy involves whether certain industries and technologies will dominate the marketplace of the future and which regulatory strategies will be utilized to ensure adequate network modernization, ample consumer protection and free competition among service providers. This paper will advocate a solution based primarily upon the development of the public switched telephone network (PSTN) and the regulation of local telephone companies, or local exchange carriers (LECs).

Public switched telephone network technology is available to all users at a relatively low cost and is virtually universal because it utilizes a single standard interface for all users. PRICE WATERHOUSE AND NAT'L ECONOMIC RESEARCH ASSOC., INC., ELECTRONIC HIGHWAYS: PROVIDING

regulatory framework is the result of developments in the telecommunications industry nationally since the 1930's. The natural monopoly model,[5] which formed the theoretical foundation of Pennsylvania's rate-of-return regulatory scheme, has been gradually eroded by regulatory pricing policies, increased competition, and the rapid pace of technological improvements.[6] Most states have already begun to implement alternative regulation proposals, either through independent regulatory action or in response to legislative mandates.[7] After almost two years of debate, Pennsylvania's General Assembly recently passed legislation to deregulate competitive services provided by local exchange carriers (LECs) and to permit alternative forms of regulation for non-competitive services.[8] Pennsylvania now stands at a crossroads, as the Public Utility Commission (PUC) is faced with the awesome task of defining the contours of the state's rapidly evolving and ever-changing telecommunications marketplace.

Even before the General Assembly formally authorized alternative regulation, the PUC began to adapt its policies to the changed economies of the telecommunications landscape.[9] However, the PUC's longstanding reliance on a cost-of-service ratemaking scheme has hampered the ability of Pennsylvania's LECs to invest in network modernization.[10] In

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THE TELECOMMUNICATIONS INFRASTRUCTURE FOR PENNSYLVANIA'S FUTURE 1-91, 2-48 (1991) (telecommunications infrastructure study initiated by Pennsylvania Chamber of Business and Industry). For example, in Pennsylvania, every business and 97% of residential households subscribe to the PSTN. FCC INDUSTRIAL ANALYSIS DIVISION, TELEPHONE SUBSCRIBERSHIP IN THE UNITED STATES (1992). This comment presumes that the ubiquity, uniformity and universality of the PSTN make it the most effective mechanism for the development of an advanced telecommunications infrastructure. *See* PRICE WATERHOUSE at 1-91.

5. *See infra* notes 12-19 and accompanying text.

6. For a complete discussion of the natural monopoly concept and its application to telecommunications regulation, see 2 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS 113-26 (2d ed. 1989).

7. "By 1991, 45 states had proposed some type of regulatory reform to stimulate the development of telecommunications infrastructure. At least half of the states have enacted some type of reform." COMMITTEE ON TELECOMMUNICATIONS, ECONOMIC DEV. PARTNERSHIP BD., TELECOMMUNICATIONS IN THE KEYSTONE STATE: A REPORT ON PENNSYLVANIA'S TELECOMMUNICATIONS INFRASTRUCTURE at v (1992).

8. *See* Act of July 8, 1993, No. 67 [hereinafter *Act 67*] H.B. 84, 176th Leg., 1993 Session. The newly passed Pennsylvania legislation allows the PUC to effectively deregulate LEC services that have been found sufficiently competitive. *Id.* at § 3005. Rates for noncompetitive services must be regulated according to a variety of price stability mechanisms, including indexes, formulas, zones of rate freedom, and streamlined ratemaking plans. *Id.* at § 3004. In return for relaxed regulation, participating LECs must develop a universally available broadband telecommunications network by 2015. *Id.* at § 3005.

9. *See infra* notes 78-81 and accompanying text.

10. Rathbun, *supra* note 1, at 6-8. For a general discussion of the incompatibility of rate-of-return regulation and the structure of the present telecommunications industry nationally, see Alfred

response to the General Assembly's mandate, Pennsylvania must now depart from cost-of-service ratemaking and alter its regulation of LECs to respond to the evolving telecommunications marketplace.[11] A successful regulatory scheme for Pennsylvania LECs would (1) authorize alternative methods of regulating Pennsylvania's LECs; (2) provide sufficient incentives for network modernization, including the development and implementation of new technologies; (3) protect consumers by avoiding unfair pricing and ensuring the universal availability of basic telephone service; and (4) promote free and fair competition between a variety of alternative technologies and service providers.

This paper will focus first on the history of telecommunications regulation and the gradual erosion of the natural monopoly model of telecommunications regulation. Second, it will examine the flaws of Pennsylvania's rate-of-return method of regulation and will discuss why cost-of-service ratemaking is an inefficient option in today's increasingly competitive marketplace. Third, it will assess Pennsylvania's regulatory posture in comparison with other states and nations. Finally, this paper will define the primary objectives of regulatory reform and will analyze which elements should be incorporated into Pennsylvania's developing regulatory landscape.

## II. Natural Monopoly Theory: The Development of Competition Through Early Policies of Residual Pricing

Telecommunications regulation developed at a time when local telephone companies were considered natural monopolies[12] because "economies of scale and operating efficiency dictate[d] that there be [only] one telephone service provider in any given geographic area."[13] In a natural monopoly setting, regulation acts as a substitute for competition. Regulators seek to simulate the workings of a competitive

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E. Kahn, *Telecommunications, Competitiveness and Economic Development—What Makes us Competitive?*, PUB. UTIL. FORT., September 13, 1990, 13, 15-16; Harry M. Shooshan, Telecommunications Modernization and the Nation's Infrastructure: Charting a New Course for Regulation and Public Policy in the United States, 12 (December 11, 1989) (unpublished article on file with National Economic Research Associates) (citing specific disincentives for network modernization in competitive marketplace under traditional cost-of-service ratemaking).

11. *See infra* text part IV.

12. Rathbun, *supra* note 1, at 3.

13. *Id.* There is some debate, however, about whether LECs were ever really natural monopolies. The essential element of a natural monopoly has been defined as decreasing unit costs over the entire extent of the market. KAHN, *supra* note 6, at 123. However, telephone companies, at least in the short term, are sometimes subject to increasing unit costs as subscribership increases. *Id.*

economic marketplace and protect consumers from exploitive pricing practices.[14] Regulatory discretion is limited, however. Rates which do not permit a utility to earn a fair return on its investment are inherently confiscatory and violate constitutional guarantees of due process.[15]

The Communications Act of 1934[16] established the Federal Communications Commission (FCC) as the primary federal regulatory mechanism for the telecommunications industry and set a national policy goal of high quality, universal telephone service at a reasonable cost.[17] Consequently, basic local telephone service was regulated in accordance with the objective of achieving universal service. Residual pricing charged basic residential services at artificially low levels in order to encourage affordable universal service.[18] These revenue losses were typically counterbalanced by high prices for long-distance or business services, which were considered outside the scope of basic telephone service.[19]

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14. KAHN, *supra* note 6, at 1. Regulation of utilities was originally justified by the "public" nature of their mission and by the structure and characteristics of the regulated industries. *See* Munn v. Illinois, 94 U.S. 113, 126 (establishing public interest as justification for government regulation of public utilities).

15. *See* FPC v. Hope Natural Gas Co., 320 U.S. 591 (1944) (defining limits on agency discretion and scope of review in rate determinations); Bluefield Waterworks and Improvement Co. v. Public Serv. Comm'n. of W. Va., 262 U.S. 679 (1923) (establishing constitutional limitations to rate relief).

16. 47 U.S.C. § 151 (1982).

17. *Id.*

18. The most often used example of residual pricing involves basic local service (dial tone plus local calling) and long distance service rates. Over the years the cost of long distance calls has decreased. However, rather than decreasing long distance rates accordingly as cost of service would dictate, much of this long distance revenue has been used by regulatory bodies to provide a subsidy for basic local service. For example, consider a case where basic local service costs $10. Assuming $3 of surplus toll revenue were available, the basic local service would be residually priced at $7.

JAMES H. CAWLEY AND NORMAN J. KENNARD, RATE CASE HANDBOOK: A GUIDE TO UTILITY RATEMAKING BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION 30 (1983) (published by Pennsylvania Public Utility Commission).

19. It is a generally accepted principle of public utility ratemaking that differences in the conditions of demand, as among the respective customer classes, indicate that each class has a different capacity and willingness to bear charges. Accordingly, with reference to value-of-service factors, rates are made so as to distribute the approved company-wide cost of service in relation to the capacity and willingness of customer groups to bear such costs. . . In addition, the operation of the value-for-service principle in utility ratemaking extends to the earning of different rates of profit from different classes of customers of service, within the framework of the overall return approved under regulation.

*Id.* at 29 (*quoting* P. GARFIELD AND W.F. LOVEJOY, PUBLIC UTILITY ECONOMICS 143 (1964)).

Residual pricing resulted in enhanced opportunities for specialized carriers, who were not required to set prices above actual costs, to compete directly with regulated LECs.[20] The FCC gradually shifted from a policy of "regulated monopoly to regulated competition."[21] In 1963, the FCC took the first step toward fostering more market competition by permitting Microwave Communications International, Inc. (MCI) to develop a private microwave network[22] between Chicago and St.Louis in order to service specialized business customers as a common carrier.[23] MCI's application was granted despite the fact that the company's network directly competed with services available from Bell and Western Union.[24] In 1969, the FCC took an additional step toward a competitive marketplace by permitting a private radio service to connect to the Public Switched Telephone Network (PSTN)[25] and to market its equipment directly to Bell's customers.[26]

The artificial subsidies of residual pricing and the FCC's early willingness to depart from a pure natural monopoly model substantially increased the competitiveness of many telecommunications services.[27] At the same time, however, technological changes were underway which were also making market entry easier for potential competitors, thus increasing the competitiveness of the telecommunications marketplace.

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20. *Id.*

21. CAWLEY AND KENNARD, *supra* note 18, at M3.

22. A microwave communications network uses radio waves as a transmission medium rather than copper wires or fiber-optic strands. *Id.* at 27.

23. In re Applications of Microwave Communications, Inc., 18 F.C.C.2d 953 (1969).

24. *Id.* The FCC granted MCI's permit by a four to three vote, but the Commission acknowledged the potential policy difficulties involved in opening up the public switched telephone network (PSTN) to competition from unregulated carriers. *See id.* at 966. The majority justified its holding on the specialized nature of MCI's service, the benefits to consumers from market competition and the continued need to modernize and develop the PSTN. *See id.* at 964-65. *See also* In the Matter of Allocation of Frequencies in the Bands Above 890Mc, 27 F.C.C. 359 (1959) (permitting private applicants to operate microwave facilities in frequencies previously reserved for regulated common carriers). In *Above 890*, the FCC held that private applicants should be permitted to utilize alternative technologies to provide specialized services to customers if they could do so more efficiently than a regulated provider. *Id.* at 404. The artificial system of subsidies created by the residual pricing of services provided ample opportunities for competition in certain high traffic and long-distance routes. CAWLEY AND KENNARD, *supra* note 18, at 30. These routes were generally priced well above cost in order to artificially reduce the cost of basic residential telephone service. *Id.*

25. *See* note 4, *supra*.

26. In the Matter of Use of the Carterfone Device in Message Toll Telephone Service, 13 F.C.C.2d 420 (1968). In *Carterfone*, the FCC struck down Bell's tariff provision prohibiting interconnection to the PSTN. *Id.* "A customer desiring to use an interconnecting device . . . should be able to do so, so long as the interconnection does not adversely affect the telephone company's operations or the telephone system's utility for others." *Id.* at 424.

27. *See* CAWLEY AND KENNARD, *supra* note 18, at M3.

## III. Technological Development and the Continued Erosion of Natural Monopolies

Telephone cable has traditionally been composed of pairs of twisted copper wires which carry transmission signals from a central office switch to a subscriber's home or office.[28] In recent years, the development of alternative transmission mediums, such as satellite, microwave and fiber optic technologies, has revolutionized the telecommunications industry.[29] Many carriers have ambitiously deployed fiber-optic cable, which has the capacity to carry vast amounts of information at a very low cost.[30] Fiber-optics will undoubtedly increase the quantity and variety of services that can be offered to subscribers over the PSTN.[31] Unlike copper cable, fiber is capable of easily carrying large quantities of voice, video and data transmissions simultaneously.[32]

In conjunction with the development of fiber optics and other alternative transmission systems, many telecommunications providers have deployed digital switches to replace older, more conventional switching technologies.[33] Digital switches process transmissions in a bitstream or binary format and are more compatible with advanced telecommunications and computer functions.[34] They can also process greater quantities of information more quickly than conventional analog technology.[35]

The evolution of digital technology and the use of the PSTN as a medium for the transmission of voice, video and data communications has blurred the distinction between data processing and telecommunications functions. The FCC abandoned its attempts to distinguish between

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28. NTIA REPORT, *supra* note 1, at 92.

29. *Id.*

30. *See* PRICE WATERHOUSE, *supra* note 4, at 1-91.

31. *Id.*

32. NTIA REPORT, *supra* note 1, at 94. "[I]t will be a very long time before the capacity of fiber optic cable is exhausted—so long that no one today is predicting when that time might arrive." Rathbun, *supra* note 1, at 5.

33. "The switching component, or switching fabric, consists of the actual elements used in making and breaking physical connections." NTIA REPORT, *supra* note 1, at 109 n.435. The first automatic switching device was invented in 1881. *Id.* at n.436. Prior to 1881, manual switching was required. *Id.* Digital switches are now the technology of choice for both public and private networks. *Id.* at 111.

34. NTIA REPORT, *supra* note 1, at 111.

35. *Id.* Improving a switching system allows the PSTN to support Advanced Intelligent Network Services. For example, Bell Atlantic's CLASS services, which are utilized by pushing the "star" button on a touch-tone telephone, are largely dependent on advanced switching technology. *Id.* In addition, switching improvements provide a framework for the provision of advanced services between different exchange carriers (inter-LATA). Such services include video conferencing, high definition television and digital audio broadcasting. *See* PRICE WATERHOUSE, *supra* note 4, at 1-95.

communications and data processing services for regulatory purposes in its Second and Third Computer Inquiries.[36] In so doing, the FCC essentially deregulated all "enhanced" network services that involved the storage, processing or restructuring of information.[37] The FCC also detariffed customer premises equipment (CPE),[38] finding that the regulation of CPE had created artificially high prices for interstate services and that sufficient competition among CPE providers had developed to justify its deregulation.[39] Recently, the District of Columbia Circuit Court removed an additional barrier to competition by permitting the divested Bell Operating Companies to market enhanced computer information services directly to subscribers.[40] The gradual blending of computer and telecommunications technologies has led to significant regulatory changes on the federal level and has fostered competition among service providers.

Two general trends have become evident regarding the impact of technological development on telecommunications competition. First, different transmission mediums have greatly enhanced the potential uses of the PSTN. Networks are being used to transmit increasingly large quantities of voice, data and video communications simultaneously. As

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36. Amendment of Section 64.702 of the Commission's Rules and Regulations, 77 F.C.C.2d 384, 35 P.U.R.4th 143 (1980), *recon.*, 84 F.C.C.2d 50 (1980), *further recon.*, 88 F.C.C.2d 512 (1981), *aff'd sub nom.*, Computer and Communications Industry Ass'n. v. F.C.C., 693 F.2d 198 (D.C. Cir. 1982) [hereinafter *Computer II*]; Amendment to Section 64.702 of the Commission's Rules and Regulations, 104 F.C.C.2d 958 (1986), *recon.*, 2 F.C.C.R. 3035 (1987), *further recon.*, 3 F.C.C.R. 1135 (1988), *vacated and remanded sub nom.*, California v. FCC, 905 F.2d 1217 (9th Cir. 1990) [hereinafter *Computer III*].

37. *See Computer II*, *supra*. Under *Computer II*, all network services were classified as either "basic" or "enhanced." *Id.* Basic services, which provide a transmission path for the movement of information, were regulated in the traditional manner. *Id.* However, enhanced services, which were defined as any network service constituting more than basic transmissions, were removed from regulation. *Id.* Enhanced services encompass the range of computer applications which provide additional, different, or restructured information to the network subscriber. CAWLEY AND KENNARD, *supra* note 18, at M4. In *Computer III*, the Commission eliminated many of *Computer II*'s structural separation requirements and permitted the Bell Operating Companies (BOCs) to engage in the sale and marketing of enhanced services. *Computer III*, *supra* note 36.

38. Customer premise equipment includes the telephones and switchboard equipment located at the cutomer's residence or business. CAWLEY AND KENNARD, *supra* note 18, at 29.

39. *Computer II*, *supra* note 36. Prior to *Computer II*, all costs attributable to CPE were included in a carrier's rate base and were ultimately borne by ratepayers. CAWLEY & KENNARD, *supra* note 18, at M7. The FCC cited increasing market competition as a primary motivation for detariffing CPE. CAWLEY & KENNARD, *supra* note 18, at M8.

40. United States v. Western Elec. Co., Inc., 900 F.2d 283, 305-07 (1990) (lifting ban on Bell Operating Company provision of information services). The ban on the Bell Operating Companies' entry into the information services market was originally part of the Modified Final Judgment and Consent Decree which divested AT&T. United States v. AT&T, 552 F. Supp. 131, 227-28 (1982).

a result, the industry has and will continue to become more competitive.[41] Providers of enhanced services will seek to compete with the Bell Operating companies directly or, alternatively, utilize the PSTN to deliver specialized services to subscribers. The conversion of most communications into a bitstream format as well as the miniaturization and increasing affordability of powerful computer technologies has made market entry much more affordable.[42]

Second, in the post-divestiture era, the FCC has shown an increasing willingness to allow market forces to control the structure of the evolving telecommunications marketplace.[43] The FCC recognized the evolving trend toward competition early and has now altered its regulatory scheme in favor of a more flexible price cap approach.[44]

## IV. The Limitations of Pennsylvania's Cost-of-Service Ratemaking Scheme

In accordance with the Public Utility Code, Pennsylvania regulates LECs according to a traditional fixed rate-of-return scheme.[45] Rate-of-return regulation has its roots in the natural monopoly theory,[46] even though the monopoly characteristics of LECs have significantly

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41. *See* NTIA REPORT, *supra* note 1, at 205, 207-08. The FCC's departure from a natural monopoly philosophy has been quite dramatic. In 1988, the average business user could select from 1,349 different kinds of CPE, which represents an increase of fifty-eight percent since 1975. *Id.* at 205. There are now more than 440 long-distance (interexchange) carriers nationally, and the price of ordinary long-distance service for the residential user has declined almost 45% since divestiture. *Id.* at 207-08; *see also Hearings on House Bill 2437, P.N. 3150 and House Bill 2441, P.N. 3154 Before the Pennsylvania House of Representatives Consumer Affairs Comm.*, 175th Leg., 1992 Session 2 (1992) [hereinafter *Hearings*] (statement of Richard D'Antonio, Chairman, Pennsylvania Telephone Association) [on file with PA House Consumer Affairs Committee].

42. *See generally* NTIA REPORT, *supra* note 1, at 205.

43. Local exchange carriers are subject to state and federal regulation, but are primarily regulated on the state level. NTIA REPORT, *supra* note 1 at 212. While competition has burgeoned on the interexchange (long-distance) level, most LECs still retain many characteristics of a natural monopoly. *Id.* Certain services, such as the provision of basic residential telephone service, are often provided without any competition. *Id.* at 212.

44. *See* Policy and Rules Concerning Rates for Dominant Carriers, 4 F.C.C.R. 2873 (1989). Rather than regulating on the basis of earnings, price caps focus specifically on the carrier's pricing of services. *See infra* notes 129-32 and accompanying text.

45. Traditional rate-of-return regulation attempts to set rates to give utilities a reasonable opportunity to recover costs incurred in providing service. The revenue requirement of a utility is set equal to the company's expenses plus a return on investment. This return on investment is calculated by multiplying the cost of capital to the company (rate of return) by the net assets dedicated to the public use (rate base). *See* CAWLEY AND KENNARD, *supra* note 18, at 151; *see also* 66 PA. CONS. STAT. ANN. § 1301 *et seq.* (1990).

46. *See supra* notes 12-19 and accompanying text.

deteriorated.[47] Consequently, the PUC's reliance on cost-of-service ratemaking has created disincentives for network modernization and has hampered the technological development of the PSTN.

Rate-of-return regulation requires the PUC to carefully scrutinize the costs historically incurred by LECs in providing telephone service.[48] Under rate-of-return regulations, a company is permitted to earn a limited return on its investment if it can prove to the PUC that the investment is needed for the provision of telephone service to the public.[49] In order to modernize an existing facility or service, a service provider must assure the PUC that new demands have arisen that make the developments "used and useful" to the public service.[50]

Under rate-of-return regulation, there is little incentive for telephone companies to invest in network modernization or to introduce new products and services.[51] In an increasingly competitive marketplace, cost-based regulation skews a utility's return on its investment.[52] If the investment fails or if the utility is unable to prove an appropriate demand increase to justify the additional expense, it will be disallowed. On the other hand, if the investment is approved by the PUC, the carrier is limited to a predetermined "fair return."[53] A company's shareholders suffer if regulators disagree with the LEC's capital investments, but at the same time, its investors are prohibited from receiving large financial windfalls after regulatory approval.[54]

This problem is compounded by Pennsylvania's policy of setting a single rate of return on the total value of a utility's rate base.[55] The

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47. Rathbun, *supra* note 1, at 6.

48. *Id. See also* Bell Tel. Co. of Pa. v. Pennsylvania Pub. Util. Comm'n., 408 A.2d 917, 920 (Pa. Commw. Ct. 1979) (outlining mathematical calculations necessary to set telephone rates in Pennsylvania).

49. Rathbun, *supra* note 1 at 6. This doctrine is commonly referred to as the "prudence principle," which permits the PUC to disallow "imprudent" expenses in an ex-post facto fashion. These costs are then removed from the rate base and are not borne by ratepayers.

50. *See, e.g.*, Bell Tel. Co. of Pa. v. Pennsylvania Pub. Util. Comm'n., 478 A.2d 921, 924 (Pa. Commw. Ct. 1984) (denying company recovery of Business Information Systems Payments to affiliated Bell Laboratories because services were not yet rendered and in public service).

51. "[C]ompetitive services offered by the telephone companies continue to be subject to traditional rate-of-return regulation which, in a competitive environment, discourages investment and limits the company's ability to respond to marketplace pressures." *Hearings*, *supra* note 41, at 3 (statement of William Harral, Vice President and Chief Financial Officer, Bell of Pennsylvania); *see also* Shooshan, *supra* note 10, at 12.

52. Shooshan, *supra* note 10, at 12.

53. *Id.* "The asymmetry of regulatory treatment obviously makes risky investments less attractive for regulated firms. The investment climate these firms experience is very much a 'heads, I win a little, tails, I lose a lot' proposition." *Id.*

54. *Id.*

55. The Pennsylvania PUC sets a single rate of return for a public utility based upon its

PUC calculates a single rate of return; it does not set different rates of return for different services based upon existing market competition or other relevant factors.[56] Still, LECs predicate their investment decisions on the rate of return set by the PUC.[57] As a result, carriers have little incentive to make risky decisions regarding network modernization or to invest in new technologies.[58] In addition, the composite rate of return utilized by the PUC imputes earnings from non-network services and further discourages network modernization.[59]

The Pennsylvania PUC sets depreciation schedules for much of the infrastructure of LECs.[60] Depreciation rates are critical to telecommunications infrastructure development because they reflect the portion of the total plant or equipment expense which may be included in the rate base and charged to ratepayers.[61] The allowable rate of depreciation is calculated based upon the average estimated life of plant or equipment.[62]

The cost-plus nature of rate-of-return regulation encourages state regulatory commissions to underestimate legitimate costs.[63] Changes in depreciation schedules usually result in higher rates for consumers,

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calculation of the "overall cost of capital." CAWLEY AND KENNARD, *supra* note 18, at 256-57. After the revenue requirement has been determined, the distribution of any rate increase among the various customer classes is determined through cost-of-service considerations and application of the residual pricing policy's universal service objective. *Id.*

56. There is an especially serious problem created by the application of rate-of-return regulation in Pennsylvania which bears directly on incentives for investment in telecommunications infrastructure. The Pennsylvania PUC sets a rate of return for telephone companies based on all intrastate services subject to its jurisdiction. It is this rate of return which governs a telephone company's investment decisions.

PRICE WATERHOUSE, *supra* note 4, at 3-20.

57. *Id.*

58. *Id.*

59. *Id.* The effect of Pennsylvania's regulatory policy will become more dramatic as more states modify traditional cost-of-service ratemaking and competition between alternative carriers and technologies increases.

60. *See* CAWLEY AND KENNARD, *supra* note 18, at 186.

61. Rathbun, *supra* note 1, at 6.

62. *Id.* The Pennsylvania PUC has traditionally utilized the "straight line depreciation" method. *Id.* at 6. The capital used to purchase utility plant is recovered from ratepayers and repaid to shareholders over the useful life of the asset. *Id.* For example, if a utility borrows $100 from investors to buy a piece of equipment and the PUC determines that the useful life of the equipment is 5 years, the depreciation expense on the equipment is $20 per year for 5 years. *See* CAWLEY AND KENNARD, *supra* note 18, at 186. As the depreciation expense is recovered, it is cumulatively deducted from the value of the rate base so that a return will no longer be earned on the expenditure. *Id.*

63. Shooshan, *supra* note 10, at 13.

thereby violating the universal service principle.[64] Long depreciation schedules restrict the ability of LECs to earn a competitive profit on network investment and to reinvest in network modernization.[65] Consequently, regulated firms expose themselves to substantial risks by installing new technologies before their old plant has been fully depreciated.[66] The result of this arrangement is an overall reluctance by LECs to invest in network development and a need for frequent rate increases if a company overcapitalizes.[67] The Pennsylvania PUC has a long history of imposing artificially long depreciation schedules, thereby lowering depreciation expenses, slowing the introduction of new technologies, and subjecting the carrier to unnecessary financial risk.[68]

Rate-of-return regulation has created a non-uniform pattern of network modernization in Pennsylvania.[69] Geographical disparities have arisen between Pennsylvania's forty-one LECs and the various services they are now capable of offering.[70] Services which depend upon enhanced digital switching and fiber technologies are scattered in a patchwork manner throughout the state, with heavy concentrations of advanced technologies in the Philadelphia and Pittsburgh regions.[71] Pennsylvania is a predominantly rural state[72], and the widening gap between the information "haves" and "have nots" has serious implications for the state's future economic development.[73]

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64. Rathbun, *supra* note 1, at 8.

65. *Id.* Low depreciation rates engender difficulties in earning a fair return on a utility's rate base. The impact of artificial depreciation schedules is especially dramatic in a competitive market, where unregulated entities can offer services to network subscribers without depreciation restrictions.

66. In an environment of accelerated technological advancement, if older assets are undepreciated and not fully recovered, then a company's rate base and prices are inflated beyond that which a competitor, who has no such regulatory restrictions, may charge. Shooshan, *supra* note 10, at 13.

67. *Id.*

68. For example, the Pennsylvania PUC depreciates the copper cable used by most LECs over 28 years. Rathbun, *supra* note 1, at 8. Under rate-of-return regulation, the company is required to depreciate the cost of installing the wire over this period, even though copper may be less technologically desirable and less efficient than fiber. *See id.*

69. *See* PRICE WATERHOUSE, *supra* note 4, at 2-36, 2-39.

70. *Id.* at 2-37 (Table 1) (showing breakdown of advanced network services offered and degree of network modernization undertaken by each of Pennsylvania's LECs).

71. *Id.* at 2-41 to 2-44 (Figures 20-23). These charts show the geographical distribution of total digital lines, fiber feeder routes, fiber inter-office facilities, and central offices equipped with Signaling System 7 (SS7) technology.

72. *See* OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 3, at 7, 13-15 (discussing diverse communications needs of rural areas and impact of state regulatory policy on network modernization and infrastructure improvement); PRICE WATERHOUSE, *supra* note 4, at 2-16.

73. PRICE WATERHOUSE, *supra* note 4, at 1-31 to 1-33 (citing importance of infrastructure development to rural areas as catalyst for economic development). Pennsylvania's rate-of-return regulation has discouraged the development of the PSTN in rural areas. For example, the town of

The application of rate-of-return regulation is mathematically and administratively complex. A rate case is a time-consuming and burdensome procedure which costs Pennsylvania's LECs and ultimately their ratepayers inordinate sums of money.[74] The expenses involved in filing a rate case are typically included in a company's operating expenses and are often at least partially absorbed by ratepayers.[75] Small telephone companies suffer disproportionately because the costs of preparing and litigating a request for rate relief are distributed among fewer subscribers.[76] The complexity, expense and inherent uncertainty of the PUC's rate case procedure have contributed to the reluctance of LECS to make capital investments which might ultimately require rate relief.[77]

## V. Network Modernization in Pennsylvania: The *Breezewood* Rate Case and the Path to Regulatory Reform

Pennsylvania's Public Utility Commission has recently changed the way certain telecommunications entities under its jurisdiction are regulated. The PUC has undertaken these changes independently and without legislative action by the General Assembly.[78] For instance, the Commission approved a "rate cap" mechanism for telecommunications resellers, who own no transmission facilities but merely resell services using the facilities of other carriers.[79] The PUC now regulates

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Bloomsburg proposed the construction of a high capacity digital highway connecting its area businesses and Bloomsburg University to Harrisburg. OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 3, at 128. The proposed network would support high speed data transmission, high resolution graphics, and compressed motion video. *Id.* Even though the PSTN could accommodate the town's needs, Bloomsburg officials believed that the pricing policies and constraints of Pennsylvania's regulatory system made construction of a private network more economical. *Id.* Ultimately, the town opted for building its own network rather than convincing their LEC that the community could generate sufficient demand to justify the new investment and guarantee a fair return to the company. *Id.* "[R]egulatory decisions will continue to determine whether rural areas have access to advanced telecommunications and, hence, whether they can participate fully in the global marketplace." *Id.* at 115.

74. *See Hearings*, *supra* note 41, at 5 (statement of Richard D'Antonio, Chairman, Pennsylvania Telephone Association); *see also* 66 PA. CONS. STAT. ANN. § 1301 (1990) (discussing procedural aspects of rate case filing).

75. *See* CAWLEY AND KENNARD, *supra* note 18, at 192 (discussing methods of including costs of rate case in utility operating expenses).

76. *See Hearings*, *supra* note 41 at 5 (statement of Richard D'Antonio, Chairman, Pennsylvania Telephone Association).

77. *Id.*

78. *Hearings*, *supra* note 41, at 2 (statement of David W. Rolka, Chairman, Pennsylvania Public Utility Commission).

79. *Id.* For a more detailed discussion of the role of resellers in the telecommunications marketplace, see CAWLEY AND KENNARD, *supra* note 18, at M13.

interexchange carriers on an operating cost basis rather than through a traditional rate-of-return methodology.[80] In addition, the Commission has begun to address the problem of depreciation rates by modifying its depreciation schedules to encourage LECs to invest in network modernization.[81]

However, the PUC has been reluctant to adopt a comprehensive statewide strategy for regulatory reform that is not grounded in rate-of-return regulation.[82] The Breezewood Telephone Company (BTC), a small local exchange carrier serving approximately 34,000 access lines, filed a rate request in 1990 which included a unique Network Modernization Proposal.[83] Specifically, BTC requested a streamlined ratemaking plan which would prospectively authorize future rate increases based on specified levels of demonstrated new investment and service.[84] In exchange for the PUC's guarantee of rate relief, BTC promised to spend $3.5 million over four years to upgrade its antiquated network with digital switches and universal private line service.[85]

The *Breezewood* case posed a direct challenge to rate-of-return regulation in Pennsylvania. Specifically, BTC sought to avoid the large administrative expenses inherent in filing rate cases by guaranteeing its

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80. The regulation of interexchange (IXC), or long-distance carriers, on a different basis than LECs has produced some confusion in Pennsylvania's telecommunications industry. If the PUC can independently institute an alternative regulatory scheme for IXCs, why was new legislation required under the current Code to depart from rate-of-return for LECs? In his testimony before the House Consumer Affairs Committee, however, Chairman Rolka downplayed the regulatory distinction between IXCs and LECs. Rolka claimed that the regulation of IXCs was "theoretically" performed on an operating ratio basis but that "most IXC tariff filings . . . receive minimal scrutiny and routine approval." *Hearings*, *supra* note 41, at 2. (statement of David W. Rolka, Chairman, Pennsylvania Public Utility Commission).

81. The PUC has now adopted remaining life and equal life group depreciation rates for LECs. PRICE WATERHOUSE, *supra* note 4, at 3-20. These rates are more reflective of actual economic life. They allow LECs to recoup investments more rapidly and encourage greater investment in network development. *Id.* Nonetheless, the problem of depreciation schedules as an inherent disincentive to network modernization is inextricably linked to rate-of-return regulation itself and will not be completely remedied until alternatives to cost-of-service ratemaking are employed. *See id.*

82. Pennsylvania Pub. Util. Comm'n. v. Breezewood Tel. Co., No. R-901666 135 (Pa. P.U.C. Jan. 4, 1991) (Opinion and Order).

83. *Id.*

84. *See* Pennsylvania Pub. Util. Comm'n. v. Breezewood Tel. Co., No. R-901666 161 (Pa. P.U.C. Nov. 6, 1990) (Recommended Decision of A.L.J. Meehan) [hereinafter *Breezewood A.L.J. Opinion*]. Prior to its 1990 filing, BTC had not had a rate increase since 1957. *Breezewood*, No. R-901666 1 (Pa. P.U.C. Jan. 4, 1991) (Fischl, F., dissenting) [hereinafter *Breezewood Dissent*]. The company had begun to upgrade its network by installing new cable and by replacing its 1950's era analog switching equipment. *Id.*

85. *Breezewood Dissent*, *supra* note 84, at 1. BTC had the highest number of multi-party subscribers in the Commonwealth prior to its 1990 rate case. *See id.* at 2-3. Because outside plant was severely constrained, many BTC subscribers did not have private line service. *See id.*

recovery of the large capital investment associated with the network improvements.[86] However, Administrative Law Judge Robert L. Meehan initially denied BTC's Network Modernization Proposal.[87] Meehan concluded that rates in excess of a "fair return" as determined by the PUC under rate-of-return regulation would be unlawful under Pennsylvania's Public Utility Code.[88] The PUC subsequently upheld Meehan's reasoning and affirmed his Recommended Decision.[89]

In a strong dissent, Commissioner Frank Fischl disagreed with the majority's approach.[90] Fischl chastised the majority for mistakenly stressing form over substance and concluded that the PUC had the necessary authority under the Code to unilaterally approve BTC's Network Modernization Proposal.[91]

The *Breezewood* decision engendered an ongoing debate about the proper interpretation of Pennsylvania's Public Utility Code.[92] The Code

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86. *See Breezewood A.L.J. Opinion, supra* note 84, at 135.

87. *Id.* at 183-85. Meehan did, however, recognize the problems posed by Pennsylvania's rigid application of rate-of-return regulation. *Id.* at 185. However, he concluded that legislative action to change the Code was necessary since the PUC could not unilaterally abandon rate-of-return principles. *Id.*

> I agree with BTC that the current method of rate regulation in this Commonwealth imposes substantial costs on a utility, and ultimately, its ratepayers in prosecuting a case for rate relief. I concur in BTC's observation that there should be some alternative to this process which would permit rate relief, when needed, in a more streamlined fashion . . . . However, given the statutory provisions of the Code, as interpreted by the appellate courts, it would appear that the Code would have to be amended to vest the Commission with the necessary discretion to approve requests for rate relief on a basis other than rate base regulation. In the absence of any statutory authority vesting the Commission with the legal ability to approve the NMP [Network Modernization Plan] proposed by BTC, I have no alternative but to recommend that the Commission reject the NMP.

*Id.*

88. Under the provisions of Section 1312 of the Code, it would appear that so much of the rates collected from the customers that produced a return in excess of a fair return would have to be refunded to the customers. Accordingly, it is my opinion that the Commission does not have the requisite authority to enter an order which would permit a utility to retain any part of its earnings in excess of a fair return on the fair value of its property used and useful in the public service.

*Breezewood A.L.J. Opinion, supra* note 84, at 184. *See also* 66 PA. CONS. STAT. ANN. §§ 1301, 1312 (1990).

89. *See Breezewood, supra* note 82 (Opinion and Order).

90. *Breezewood Dissent, supra* note 84.

91. *Id.* Fischl stressed the practical result of the rate proceeding from BTC's perspective. *See id.* at 4. As a result of the nine month litigation, the majority of BTC's customers would receive a decrease in their monthly dial-tone charge. *Id.* The company itself, having already spent $2.5 million in network improvements, received a rate increase of less than a third of its legal fees. *Id.* "While the Commission and the various parties debate, the investment flows elsewhere." *Id.* at 5.

92. Specifically, the debate concerns the ratemaking provisions of the Code in Title 66. *See* 66 PA. CONS. STAT. ANN. § 1301 (1990).

is based on the natural monopoly theory of ratemaking and therefore does not expressly authorize the PUC to deregulate sufficiently competitive services.[93] In addition, Pennsylvania courts have consistently interpreted the ratemaking provisions of the Code as linking "just and reasonable" rates to a rate-of-return methodology.[94] On the other hand, opponents of regulatory reform argue that the present Code does not prohibit LECs from developing an advanced telecommunications network.[95]

The PUC's limited departure from rate-of-return regulation for resellers and interexchange carriers has created additional uncertainty about the limits of the PUC's power under Pennsylvania's Public Utility Code.[96] Nonetheless, it is increasingly apparent that broad-based reform, including a significant departure from cost-of-service ratemaking, is necessary to compete with the aggressive deployment schedules of other states and nations.[97] Changes of this nature would require a reinterpretation of Pennsylvania's longstanding regulatory practices. Pennsylvania's General Assembly recognized the need for comprehensive regulatory reform in June, 1993 when it passed legislation authorizing the PUC to deregulate competitive LEC services and implement alternative regulation plans for noncompetitive LEC services.[98]

## VI. Pennsylvania and Other States: Alternatives to Rate of Return Regulation

Advances in telecommunications technology have created an information-based economy that does not respect traditional geographic or political boundaries. Telecommunications infrastructure development has been viewed as a gateway to the global economic marketplace.[99] As a result, interstate and international competition has developed to deploy

93. PRICE WATERHOUSE, *supra* note 4, at 3-20. Once an entity is subjected to PUC regulation as a natural monopoly, it is by nature noncompetitive. The Code makes no provision for altering a utility's regulatory status in response to changes in market conditions. The result is the present quagmire—the PUC must regulate competitive services as if they were inherently monopolistic.

94. *See, e.g.*, Barasch v. Pennsylvania Pub. Util. Comm'n., 562 A.2d 414 (Pa. Commw. Ct. 1989) (applying used and useful principle to regulation of all Pennsylvania utilities); Lower Paxton Township v. Pennsylvania Pub. Util. Comm'n., 317 A.2d 917, 920 (Pa. Commw. Ct. 1974) (finding just and reasonable rates as fair value of property used and useful in public service).

95. *Hearings*, *supra* note 41 at 2-3 (statement of David W. Rolka, Chairman, Pennsylvania Public Utility Commission); *Hearings*, *supra* note 41, at 1-2 (statement of Irwin A. Popowsky, Consumer Advocate of Pennsylvania).

96. *See supra* note 80 and accompanying text.

97. *See infra* part VI.

98. *See Act 67*, *supra* note 8.

99. *See supra* note 1.

a highly advanced network capable of meeting still undetermined future needs.[100]

Other nations have been aggressively deploying advanced telecommunications technologies for many years.[101] In 1989, Japan spent nineteen percent more on telecommunications per capita than the United States.[102] France's Minitel program, which was instituted in the early 1980's, now provides over 500 advanced information services to business and residential customers and includes the world's most comprehensive public videotex system.[103]

Although the FCC has taken several steps to encourage network modernization and to react to increasing competition among service providers, the primary regulatory authority for LECs rests with the states.[104] Most states have taken steps to reform the traditional methods of LEC regulation and twenty-eight states have significantly departed from rate-of-return regulation.[105] The exact nature of these reforms vary widely from state to state but can generally be classified as deregulation,[106] incentive or alternative regulation,[107] social contracts[108] and price regulation.[109] The challenge for state regulators is universally the same—to encourage the modernization of the PSTN, promote meaningful market competition, and protect consumers from monopolistic pricing practices.

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100. *See* PRICE WATERHOUSE, *supra* note 4, at 1-4.

101. Japan has set national telecommunications investment targets, which include the deployment of fiber-optic networks to every business and home in the country. PRICE WATERHOUSE, *supra* note 4, at 1-41. Japan recently adopted the "Technopolis" program, which calls for the development of "smart cities" that will use a combined fiber and satellite network. *Id.* In addition, the Japanese are establishing regional information hubs which will serve as platforms for economic development on a national basis. *Id.*

102. *Id.* at 1-42.

103. PRICE WATERHOUSE, *supra* note 4, at 1-43. More than 95% of France's large businesses and 75% of small businesses in the country utilize the Minitel network. *Id.* Videotex is an interactive information system that is broadcast over the PSTN and received on adapted television receivers. *Id.* at F-9.

104. The Federal Communications Act created a dual regulatory scheme for the telecommunications industry. *See* 47 U.S.C. § 151 (1982). Interstate services are primarily regulated by the FCC, while intrastate services fall within the purview of the states. *See* NTIA REPORT, *supra* note 1, at 260.

105. *See* PRICE WATERHOUSE, *supra* note 4, at 1-46.

106. *See infra* notes 110-18 and accompanying text.

107. *See infra* notes 119-24 and accompanying text.

108. *See infra* notes 125-28 and accompanying text.

109. *See infra* notes 129-32 and accompanying text.

Several states have completely or partially deregulated LECs.[110] In 1986, the Nebraska Legislature completely removed LECs from rate regulation.[111] Nebraska's deregulation scheme is comprehensive; it makes no distinction between competitive and noncompetitive services.[112] A Nebraska LEC is required to notify its affected customers of a rate increase sixty days in advance.[113] Moreover, the Act does not require LECs to invest in modernization and to develop advanced network services.[114] The Nebraska Public Service Commission has limited authority to investigate local exchange rate increases.[115]

Nebraska's experiment with deregulation has been credited with advancing the deployment of new technologies and creating a statewide boom in information-intensive industries.[116] However, Nebraska's policy has also been criticized for not decreasing the state's higher basic service costs.[117] Deregulation has been blamed for creating a nonuniform network which deprives rural communities of the benefits of enhanced services.[118]

Unlike Nebraska, most states have not completely removed LECs from traditional rate regulation. Many states have adopted alternative or incentive regulation plans that relax earnings restrictions on competitive services, provide a variety of consumer safeguards against unfair pricing and competition, and still maintain a modified rate-of-return scheme for

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110. Some of the states that have completely or partially deregulated LECs include Nebraska, Iowa, Montana, Oregon and Nevada. *See* PRICE WATERHOUSE, *supra* note 4, at 1-47 to 1-53.

111. NEB. REV. STAT. § 86-803(1) (1991).

112. *Id.*; *see also* Rathbun, *supra* note 1, at 13.

113. NEB. REV. STAT. § 86-803(2) (1991). In contrast, Iowa and Nevada have instituted service-specific deregulation. PRICE WATERHOUSE, *supra* note 4, at 1-50. Iowa has deregulated more than fourteen "competitive" services since 1983, and market competition has taken the place of traditional rate regulation for these services. *Id.*; Rathbun, *supra* note 1, at 13.

114. Rathbun, *supra* note 1, at 13.

115. NEB. REV. STAT. § 86-803 (1991). Specifically, the Commission may only investigate rate increases which exceed a statutorily defined figure, *id.* at § 86-803(7), or if a specified percent of a company's subscribers sign petitions requesting review, *id.* at § 86-803(3). *See also* PRICE WATERHOUSE, *supra* note 4, at 1-55.

116. Rathbun, *supra* note 1, at 13. Omaha, Nebraska has become the "800 number capital of the world," *id.* at 13, with over 10,000 jobs in the telecommunications industry and an unemployment rate below three percent. PRICE WATERHOUSE, *supra* note 4, at 1-57. More than four percent of the state's jobs are now somehow related to the telecommunications industry. *Id.* In addition, advanced services and network modernization efforts have continued to expand in the absence of rate regulation. *Id.*

117. Rathbun, *supra* note 1, at 14.

118. *Id.* Nebraska's LECs have been criticized for not investing uniformly in network modernization. *Id.* The bulk of investment has occurred in the Lincoln and Omaha regions. *Id.* Still, the relatively high costs of basic service may be partially justified by other factors, including the length of the local subscriber loop and the rural character of the state. *Id.*

non-competitive services.[119] In some cases, earnings above the permissible rate of return or range of returns are shared between the LEC and its ratepayers.[120] New Jersey recently passed legislation authorizing a departure from rate-of-return regulation and permitting LECs to petition the Board of Regulatory Commissioners for alternative regulation plans.[121] The Act also establishes a framework for careful regulatory monitoring and strictly prohibits the cross-subsidization of competitive services.[122] Alternative regulation plans, such as the one now being implemented in New Jersey, provide long-term price flexibility to LECs and stimulate the deployment of fiber-optics and other new technologies.[123] However, the New Jersey proposal does not set specific deadlines for network modernization and does not guarantee that all regions of the state will benefit equally from the increased investment.[124]

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119. Many states have adopted some form of incentive regulation, a broad term which involves the modification of rate-of-return regulation and a limited departure from cost-of-service principles. Incentive plans often entail one or more of the following: relaxed regulation of competitive services, alternative forms of regulation for noncompetitive services, and the sharing of earnings above a defined rate of return between a carrier and its ratepayers. Some of the states that have enacted proposals of this nature include: California, Connecticut, Florida, Georgia, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, New Jersey, New Mexico, Rhode Island, Tennessee, Texas, Washington and Wisconsin. PRICE WATERHOUSE, *supra* note 4, at 1-50. Many of the plans listed above also incorporate "banded rate of return" proposals, where regulators set a range of returns, above which the company is required to share profits with its ratepayers. *See id.*

120. *See* Rathbun, *supra* note 1 at 8; Shooshan, *supra* note 10, at 14.

121. *See* N.J. REV. STAT. § 48:2-21.16 (1992). The legislation codified a 1987 Rate Stability Plan for New Jersey Bell which was previously approved by the Board of Regulatory Commissioners.

122. *Id.* at 48:2-21.18. Because certain services, such as basic residential telephone service, are still provided on a monopoly basis, consumer protection is a key component of any regulatory reform proposal. Like many other states, New Jersey's Act forbids LECs from engaging in cross-subsidization, or subsidizing the cost of competitive services with revenues derived from regulated noncompetitive services. *Id.* In addition, LECs must "unbundle" their costs to account for the individual service elements involved in providing a particular competitive service. *Id.*; see note 161 for an additional discussion of "unbundling." Competitors are given the opportunity to purchase the unbundled service elements needed to provide network services directly from the LEC under predefined terms and conditions. *Id.*; *see also* Rathbun, *supra* note 1, at 11 (discussing the inherent difficulties of strict cost allocation and the harmful effect of cross-subsidization on market competition). The cross-subsidization problem has long been a primary concern of opponents of regulatory reform in Pennsylvania. *See Hearings*, *supra* note 41, at 4-5 (statement of Gerard F. Boyle, Chairman, Pennsylvania Cable Television Association).

123. *See* PRICE WATERHOUSE, *supra* note 4, at 1-69.

124. New Jersey Bell's recently approved network development proposal included plans to spend $1.8 billion over the next five years to develop an all-digital switching network. *Id.* New Jersey Bell has also proposed the employment of price regulation for noncompetitive services after 1996. *Id.* New Jersey's cable television companies adamantly opposed the plan, citing the lack of adequate consumer and competitive safeguards, concern over potential rate increases, and insufficient market competition for "competitive" services. *Id.*

Several states have opted for a social contract ratemaking scheme, which authorizes LECs to negotiate short-term pricing and modernization reforms with state regulators.[125] Vermont approved a social contract with its principal LEC in 1988.[126] In exchange for freedom from rate-of-return regulation, New England Telephone agreed to freeze basic service rates and invest $248 million in infrastructure modernization over a two-year period.[127] However, due to the short-term nature of the social contract approach, "the extent to which Vermont is prepared to reform its regulatory process permanently is unclear and will likely depend on the end result of this important first step."[128]

On the federal level, the FCC has replaced rate-of-return regulation with price caps, a common form of alternative regulation.[129] Price regulation concentrates on the price of a particular network service, rather than focusing on the carrier's earnings.[130] Price caps are a unique alternative to rate-of-return regulation because they simplify the regulatory process, encourage network modernization, and provide a flexible and predictable pricing scheme for LECs.[131] Price regulation encourages innovation and investment and many states have incorporated price caps, especially for noncompetitive services, into their alternative regulation plans.[132]

Pennsylvania's new regulatory reform legislation contains a variety of all of these elements and can properly be classified as an alternative

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125. *See* Rathbun, *supra* note 1, at 14.

126. VT. STAT. ANN. tit. 30, § 226(a) (1989).

127. Rathbun, *supra* note 1, at 14. The social contract approach in Vermont protects ratepayers through guaranteed rate stability, and at the same time, requires a specific level of network investment. *See* VT. STAT. ANN. tit. 30, § 226(a) (1989). In this way, regulators can guarantee that an advanced and uniform network will be built. In Vermont, the $248 million committed to network modernization must be spent or refunded to ratepayers. *See* Shooshan, *supra* note 10, at 14.

128. Shooshan, *supra* note 10, at 14.

129. *See* Policy and Rules Concerning Rates for Dominant Carriers, 4 F.C.C.R. 2873 (1989).

130. *See* Shooshan, *supra* note 10, at 15-16. Price caps are a common component of alternative regulation plans. Under price regulation, a carrier must limit its price increases to an established price index. Price caps have been proposed in New Jersey to regulate noncompetitive services under the state's newly enacted regulatory reform legislation. *See* PRICE WATERHOUSE, *supra* note 4, at 1-67. Pennsylvania's regulatory reform law also contains a price stability mechanism that allows the PUC to use price indexes or formulas to limit the increases in an LEC's total annual revenues from noncompetitive services. *See Act 67*, *supra* note 8, at § 3004(d)(2).

131. *See* Kahn, *supra* note 10, at 16. Price regulation mitigates the cost-plus character of rate regulation through its focus on prices rather than a utility's earnings. *See id.* In addition, price caps give the regulated entity more incentives to improve efficiencies, control costs and invest aggressively in network modernization. *See id.* Such investment would typically have been considered too risky under a rate-of-return approach. *See id.*

132. California, New Mexico, New York, North Dakota, Oregon, Oklahoma, Michigan, Pennsylvania and Tennessee are a few of the states that are either considering or have already implemented some form of price regulation. *See* PRICE WATERHOUSE, *supra* note 4, at 1-50.

regulation scheme.[133] The Act deregulates services that the PUC determines are sufficiently competitive.[134] At the same time, LECs may submit alternative regulation plans to the PUC for the regulation of noncompetitive services.[135] The PUC is authorized to approve alternative regulation plans after carefully considering the plan's impact on rates and service prices.[136] The new law contains a strong expression of legislative intent that a price stability mechanism should limit the fluctuation in an LEC's total annual operating revenues from noncompetitive services to 2.25% less than the Gross Domestic Product Price Index (GDPPI) in order to gain PUC approval.[137] In return for relief from traditional rate regulation, participating LECs must also commit to specific network modernization schedules, including the development of a universal fiber-optics interoffice and distribution network by the year 2016.[138]

As exemplified in the PUC's *Breezewood* decision, Pennsylvania's progress toward regulatory reform has been slower than that of many other states.[139] Pennsylvania's neighbors, Ohio and New York, have both implemented significant regulatory reforms,[140] and New Jersey, Delaware, Maryland, West Virginia and Virginia have modified traditional rate-of-return regulation with either price caps, social contracts or earnings sharing plans.[141] Based on present levels of network development and investment, Pennsylvania will fall behind many of its neighbors in making advanced services available to subscribers through

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133. *See Act 67, supra* note 8.

134. *Id.* at § 3004(D)(3).

135. *Id.* at § 3003.

136. *See id.* at § 3004.

137. The language in Act 67 should prove helpful for LECs seeking guidance on the range of alternative regulation proposals that might gain PUC approval under the new law. The new law unequivocally states that:

> [A] price stability mechanism that allows total annual revenues from noncompetitive services to increase or decrease from the previous year's total revenues for noncompetitive services as a result of tariff rate changes based on the annual change in the Gross Domestic Product Price Index, as calculated by the United States Department of Commerce, minus 2.25% may meet the requirements of this section.

*Act 67, supra* note 8, § 3004(D)(2).

138. *Id.*, at §§ 3003-3007.

139. Until the passage of the 1993 regulatory reform legislation, Pennsylvania was among a distinct minority of states that had not undertaken any significant regulatory reforms. *See* PRICE WATERHOUSE, *supra* note 4, at 1-51.

140. *Id.* at 1-69, 1-73. Ohio law gives the Commission total flexibility to adopt incentive regulation plans or deregulate services when appropriate or both. *Id.* New York has approved a price cap plan for Rochester Telephone, the state's second largest LEC. *Id.*

141. *Id.* at 1-67 to 1-71.

the PSTN.[142] Pennsylvania's newly enacted statute authorizing alternative forms of regulation for LECs has provided an effective framework for regulatory reform. The PUC now has the opportunity to use its new statutory authority to spur network modernization and make the Commonwealth a national leader in the provision of advanced telecommunications services.

Opponents of regulatory reform in Pennsylvania have cited the need for consumer protection and the inability of alternative regulation plans to establish a meaningful framework for market competition.[143] Cable television companies argue that they can install fiber to the home more cheaply and efficiently than LECs.[144] They claim that a regulatory policy which relies on the PSTN for the provision of enhanced telecommunications services is inherently biased.[145] Pennsylvania's newspaper publishers share these concerns, and fear that exploitive pricing and unfair competition will result if LECs are permitted to "control both the conduit into every home and the content flowing through it."[146]

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142. PRICE WATERHOUSE, *supra* note 4, at 1-73 to 1-77. A 1991 Pennsylvania Chamber of Business and Industry study utilized the following factors to compare the telecommunications infrastructures of the Mid-Atlantic states: (1) the percentage of digital access lines statewide; (2) the percentage of Signaling System 7 (SS7) access lines statewide; (3) the percentage of SS7 central office switches; (4) the percentage of fiber sheath miles statewide; (5) the percentage of fiber working channels; and (6) the capital expenditures for modernization, growth and replacement per access line. *Id.*

143. During hearings of the House Consumer Affairs Committee on earlier regulatory reform legislation for LECs, representatives of the Consumer Advocate, the Pennsylvania Newspaper Publishers Association, and the Pennsylvania Cable Television Association stressed the importance of protecting consumers from monopolistic pricing practices, the need for fair competition in a rapidly changing marketplace and the state's inability to predict the future shape and structure of the telecommunications marketplace. *See Hearings*, *supra* note 41 (statements of Irwin A. Popowsky, Consumer Advocate of Pennsylvania; James E. Dible, Chairman, Telecommunications Subcommittee of the Pennsylvania Newspaper Publishers Association; Gerard F. Boyle, Chairman, Pennsylvania Cable Television Association).

144. *See* George Gilder, *Cable's Secret Weapon*, FORBES, April 13, 1992, at 80.

145. *Id. See also Hearings*, *supra* note 41, at 2-3 (statement of Gerard F. Boyle, Chairman, Pennsylvania Cable Television Association) (arguing against adoption of statewide regulatory policy which would restrict ability of cable operators to deploy fiber-optic cable and comparing effects of cable fiber with fiber-based services provided by LECs).

146. *See Hearings*, *supra* note 41, at 2 (statement of James E. Dible, Chairman, Telecommunications Subcommittee of the Pennsylvania Newspaper Publishers Association). The Pennsylvania Newspaper Publishers Association (PNPA) argues that any major departure from rate-of-return regulation would permit LECs to compete directly with newspapers for a limited pool of advertising dollars. "Newspapers certainly acknowledge that a day will come when people might get their news without a printed product . . . . But for our state government to embrace the telephone company as both the conduit for and the provider of that information is frightening." *Id.*

The pace of technological improvements, the link between telecommunications and economic development, and the efforts underway in other states all necessitate swift action by the PUC in approving alternative regulation proposals and ensuring the development of a uniform and advanced telecommunications infrastructure in Pennsylvania. The concerns of Pennsylvania's newspaper and cable television industries are appropriate and genuine. However, the PSTN is the only existing communications system that reaches all of Pennsylvania's businesses and over ninety-seven percent of the state's residential households.[147] As a result, the PSTN is the logical and most effective focus of any statewide reform effort. Still, any alternative regulation proposal approved by the PUC must carefully balance the need for network modernization with the protection of basic ratepayers and the promotion of fair competition among alternative technologies and service providers.

## VII. A Prescription for Reform: The Key Elements of a Regulatory Reform Plan for Local Exchange Carriers in Pennsylvania

The deterioration of the natural monopoly characteristics of LECs has made rate-of-return regulation incompatible with Pennsylvania's future economic and social needs. Cost-of-service ratemaking must be replaced, and Pennsylvania's newly enacted alternative regulation statute provides a genuine opportunity for productive regulatory change. Alternative regulation proposals approved by the PUC under the new law should meet three key objectives: (1) provide adequate incentives for swift network modernization; (2) protect ratepayers from monopolistic and unreasonable pricing practices; and (3) promote fair competition between alternative technologies and service providers.

### *A. Modernize the Public Switched Telephone Network*

Regulatory reform in Pennsylvania should guarantee that a uniform, statewide advanced telecommunications network will be constructed by LECs. The PSTN is essentially a public commodity that has been constructed with private dollars. It is the only uniform and universal communications system in Pennsylvania and is therefore the natural focus of any regulatory reform effort.[148] The aim of regulatory reform is to give LECs sufficient incentives to invest private dollars in the modernization of the public network. With a proper regulatory structure,

147. *See* FCC INDUSTRIAL ANALYSIS DIVISION, TELEPHONE SUBSCRIBERSHIP IN THE UNITED STATES (1992).

148. *See* note 4, *supra.*

a modernized network will serve as a valuable conduit for competition between different service providers and technologies.

Social contract plans, such as the one in place in Vermont, exchange rate relief for guaranteed levels of network investment.[149] As part of any alternative regulation proposal, the Pennsylvania legislation should require the PUC to ensure that precise time frames for network development are established. In this way, the General Assembly can ensure that the tangible benefits of a broadband, digitally-switched network capable of carrying voice, data, and video transmissions reach all regions of the state.

In conjunction with network modernization schedules, alternative regulation proposals should also provide for the deregulation of competitive LEC services. The natural monopoly theory is no longer applicable to many of the services now being offered by Pennsylvania's LECs. In the new alternative regulation statute, the General Assembly recognized that regulation was originally intended to be a substitute for free competition. Under certain conditions, the law authorizes the PUC to deregulate services that are deemed sufficiently competitive.[150] Of course, the PUC must be wary of the inherent difficulties in determining whether sufficient competition exists to warrant the deregulation of a particular service. Pennsylvania's alternative regulation statute includes safeguards to allow the PUC to monitor market conditions and to reclassify services when appropriate.[151]

Alternative regulation plans should only be authorized for services which the PUC determines to be noncompetitive. Regulation is still needed where market competition does not exist, but Pennsylvania should not be forced to permanently accept only rate-of-return regulation or variations of cost-of-service ratemaking. Instead, the PUC should have the authority to tailor ratemaking plans to meet the individual needs of Pennsylvania's diverse LECs. The regulatory focus on costs and earnings should be deemphasized in favor of a price cap approach. Price regulation simplifies the regulatory process, mitigates the inherent problems of cost-plus ratemaking, and provides ample incentives for network modernization and investment.[152] However, if an LEC so desires, the Commission should be able to approve and implement other incentive regulation plans.[153]

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149. *See supra* notes 125-28 and accompanying text.

150. *Act 67, supra* note 8, at § 3004(D)(3).

151. *See generally, id.* at § 3004.

152. *See supra* notes 130-32 and accompanying text.

153. Pennsylvania's statute gives the PUC ample authority to authorize a wide range of

*B. Protect Ratepayers*

The departure from rate-of-return regulation should not diminish the importance of the PUC in protecting ratepayers from exorbitant telephone rates and unreasonable pricing policies. The PUC's role in monitoring the quality and universality of telephone service is especially critical when LECs provide both competitive and noncompetitive services. Any alternative regulation proposal should incorporate a mechanism for PUC review of service quality issues.[154]

The exact safeguards needed to protect ratepayers from unfair pricing policies depend upon the regulatory scheme employed for individual LECs. For example, price caps place inherent indexed limits on a carrier's rates. Consequently, carriers regulated under a price cap approach should be subject to price scrutiny by the PUC only to the limits of the regulatory scheme. To the greatest extent possible, the PUC should allow market forces to regulate the price of competitive services. However, the PUC must have the discretion to investigate service quality complaints for both competitive and noncompetitive services and to set minimum service quality standards for Pennsylvania's LECs. For instance, under the new Pennsylvania law, the PUC is permitted to reclassify competitive services as noncompetitive and to regulate them according to an approved alternative regulation plan.[155]

An initial rate freeze for basic services should be incorporated into any network modernization proposal. In accordance with the national universal service policy, LECs should agree not to raise rates, at least in the short-term, for basic residential telephone service. Ultimately, the benefits of an advanced telecommunications infrastructure will pervade all aspects of society. However, fairness dictates that the large short-term costs of enhanced network services should be borne primarily by those who benefit from them.[156] Customers who utilize only dial-tone service

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alternative regulation proposals and to reclassify services when appropriate. *See generally Act 67, supra* note 8, at § 3004. The law also provides specific guidance on the types of price stability mechanisms that are likely to garner PUC approval. *Id.* at § 3004(D)(2); *see also id.* at § 3006.

154. Under the new Pennsylvania law, the PUC retains its authority over service quality standards. *See Act 67, supra* note 8, at § 3009(b).

155. *Id.* at § 3005(d).

156. Basic services have historically been subsidized with revenues derived from the provision of discretionary services through residual pricing policies. *See supra* note 18 and accompanying text. It is becoming increasingly clear to LECs that with greater competition for the provision of competitive services, these artificial subsidies cannot be maintained. "Competition, on an admittedly limited basis, exists even for local calling . . . . We can argue what the real cost is, but there is no longer any realistic dispute that basic service is today priced below cost." *Hearings on Senate Bill 2, P.N. 2 Before the Pennsylvania Senate Committee on Communications and High Technology*, 176th Leg., 1993 Session 4 (1993) (statement of Daniel J. Whelan, Vice President, Regulatory and

in a residential context should not be unfairly burdened with a disproportionate share of the costs of network modernization.[157]

### C. *Promote Free and Fair Competition*

Promoting competition should be a primary goal of any regulatory proposal. Any alternative regulation plan approved by the PUC must promote free and fair competition among alternative technologies and service providers. Local exchange carriers should not unfairly control both the development and use of the PSTN. On the other hand, LECs should be able to compete fairly with other service providers for the provision of competitive services. Moreover, the regulatory scheme should not be so inflexible as to restrict market entry by carriers wishing to compete with LECs for the provision of noncompetitive services.[158] In this way, services that are now provided on a monopoly basis can eventually be opened to market competition.

Any alternative regulation proposal must expressly prohibit cross-subsidization and provide a mechanism to monitor alleged cross-subsidization violations. LECs should not be permitted to subsidize their competitive services with revenues derived from the provision of regulated noncompetitive services. Act 67 gives the PUC broad flexibility to establish rules to prevent cross-subsidization and ensure proper cost allocation.[159] However, strict cost allocation is an administratively complex and speculative effort which may not always be necessary depending upon the form of regulation employed for particular LECs.[160] Consequently, the PUC should establish procedures to quickly investigate alleged cross-subsidization violations without placing undue administrative burdens on LECs.

Pennsylvania must develop an open network architecture (ONA) to encourage alternative providers to utilize the PSTN to compete with LECs on a service-by-service basis.[161] In an open network, competitors are

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Governmental Affairs, Bell of Pennsylvania).

157. Because many small LECs in Pennsylvania already have skewed rate structures, a hardship exemption for small companies might be considered in order to ease the transition from the subsidies of rate-of-return pricing to a competitive marketplace. In this way, small companies could raise rates gradually over a number of years in order to adjust to the new market structure and invest in network modernization.

158. Pennsylvania's alternative regulation law allows the PUC to authorize more than one LEC for the provision of basic residential phone service. *Act 67*, *supra* note 8, at § 3009(a).

159. *See id.* at § 3005(g)(2).

160. Many supporters of price regulation argue that true price caps naturally prevent carriers from cross-subsidizing competitive services. *See* United States v. Western Elec. Co., 993 F.2d 1572, 1580 (D.C. Cir. 1993).

161. The FCC developed the ONA concept during its Third Computer Inquiry. *See Computer*

guaranteed fair access to the public network and are given the opportunity to purchase "unbundled" service elements at the LEC's cost.[162] The competing service provider is thereby given equal access to the PSTN and is able to directly compete with the LEC. Act 67 requires the PUC to establish uniform open network standards for the provision of competitive services in order to promote meaningful competition between different technologies and service providers.[163]

## VIII. Conclusion

The original natural monopoly characteristics of the local exchange marketplace have steadily deteriorated over the past fifty years. Advances in telecommunications technologies and the artificial subsidies of residual pricing have significantly opened the market to competition. Moreover, Pennsylvania's reliance on a fixed rate-of-return regulation scheme discourages LECs from investing in network modernization.

The information age has arrived and it poses great challenges for Pennsylvania's future economic and social welfare. The PUC must now have the foresight and courage to walk the delicate public policy tightrope between the need for network modernization, the protection of basic ratepayers, and the promotion of meaningful competition in the continually evolving telecommunications marketplace.

Pennsylvania now has the ability to depart from rate-of-return regulation and adapt alternative regulatory strategies to compete successfully in the information economy. The PUC must adopt regulatory strategies that are comprehensive in scope, yet flexible enough to respond to the rapid changes in the local exchange marketplace.

*Curtis B. Toll*

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*III*, *supra* note 37 and accompanying text. ONA allows alternative service providers to connect to the public switched telephone network at a stable and fair price. NTIA REPORT at 272-81. In conjunction with the prohibition on cross-subsidization, ONA is intended to promote and improve meaningful competition in the local exchange marketplace. *See id.*; *see also* PRICE WATERHOUSE, *supra* note 4, at F6.

162. NTIA REPORT, *supra* note 1, at 272-81. "Unbundling" refers to the regulatory breakdown of costs by service elements in the provision of competitive services. *See* OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 3, at 68 (discussing impact of unbundling on service competition in rural areas). Unbundling encourages the use of alternative and new technologies and spurs price competition. *Id.* The option to purchase necessary service elements at cost gives competitors the chance to undercut the LECs wherever possible by offering individual services to subscribers at a lower price.

163. *See Act 67*, *supra* note 8, at § 3005(e).